

CLAIMS

1 1. A multipath access system for use in an automated immunoassay analyzer, comprising:
2 a transport device having a plurality of vessel holding members, said transport
3 device moving said plurality of vessels along one or more continuous loops;
4 at least one delivery station for adding a vessel to said transport device at a specified
5 vessel holding member of said plurality of vessel holding members;
6 at least one transfer station for removing a vessel from and replacing a vessel onto
7 said transport device; and
8 a controller for controlling the transport of a vessel by said transport device from
9 said delivery station to said transfer station based on information
10 (i) identifying a test or operation being performed in said vessel, and
11 (ii) identifying a location of a vessel holder which holds said vessel within
12 said transport device.

1 2. A multipath access system as recited in claim 1 further comprising at least one pipetting
2 station for adding one or more reagents to a vessel positioned in a vessel holding member of
3 said transport device.

1 3. A multipath access system as recited in claim 1 further comprising at least one wash
2 station for washing test vessels positioned in said at least one wash station.

1 4. A multipath access system as recited in claim 3 wherein said at least one wash station is
2 combined with said at least one transfer station.

5. A multipath access system as recited in claim 1 wherein said transport device is movable
in both forward and reverse directions.

6. A multipath access system as recited in claim 1 wherein each holding member of said
plurality of vessel holding members are locatable at a plurality of spaces equal in number to

said plurality of vessel holding members, and wherein said transport device moves a preset number of spaces that is greater than one with every move.

7. A multipath access system as recited in claim 6 wherein said preset number includes a sum of the number of spaces moved in a forward direction and a number of spaces moved in a reverse direction in a single move.

8. A multipath access system as recited in claim 6 wherein said preset number is an integer divisor of a total number of said plurality of vessel holding members in said transport device.

9. A multipath access system as recited in claim 1 further comprising at least one agitating member positioned adjacent said transport device at a location where vessels in said plurality of vessel holding members contact said agitating member when said transport device is moved.

10. A multipath access system as recited in claim 9 wherein said at least one agitating member is stationary.

11. A multipath access system as recited in claim 1 wherein said transport device is comprised of at least two continuous loops and includes a transfer device which transfers vessels between said at least two continuous loops.

12. A multipath access system as recited in claim 1 wherein said at least one transfer station includes a transfer device which moves a vessel from said transport device to at least one position spaced away from vessel holding members of said transport device.

13. A multipath access system as recited in claim 12 wherein said at least one position spaced away from vessel holding members of said transport device is located within a wash station for performing one or more wash operations on said vessel.

14. A multipath access system as recited in claim 12 wherein said at least one position spaced away from vessel holding members of said transport device is located within a luminometer.
15. A multipath access system as recited in claim 12 wherein said transfer device moves a vessel from said transport device to at least two different positions spaced away from vessel holding members of said transport device.
16. A multipath access system as recited in claim 1 having at least two transfer stations.
17. The multipath access system of claim 1 wherein said transfer station includes a slide member which slides perpendicular to a portion of a path traveled by said transport device.
18. The multipath access system of claim 17 wherein said slide member includes at least two projection members projecting from said slide member which are spaced far enough apart to accommodate at least one test vessel therebetween, at least one of said projection members contacting said vessel during movement of said slide member.
19. The multipath access system of claim 18 wherein said slide member can move at least two vessels simultaneously where a first of said two vessels is removed from said transport device and moved to a station one position away from said transport device, and a second of said two vessels is moved to a station two positions away from said transport device.
20. The multipath access system of claim 19 wherein said station one position away from said transport device is a wash station.
21. The multipath access system of claim 19 wherein said station two positions away from said transport device is a luminometer subsystem.

22. A method for controllably moving vessels in an automated immunoassay analyzer according to varying time schedules, comprising the steps of:

adding a plurality of vessels to a transport device having a plurality of vessel holding members;

identifying a test or operation to be performed in each of said plurality of vessels, and a location of a vessel holder which holds each of said vessels within said transport device;

transporting said plurality of vessels with said transport device along one or more continuous loops;

removing a vessel from or replacing a vessel onto said transport device; and

controlling said transporting and removing steps based on the test or operation to be performed and the location of said vessel holder identified in said identifying step.

23. The method of claim 22 wherein said transporting step moves in forward and reverse directions.

24. The method of claim 23 wherein a number of spaces moved in said transporting step is the same for every movement of said transporting device.

25. The method of claim 22 wherein said removing or replacing step is achieved using a transfer station which includes a transfer slide that moves perpendicular to a portion of a path traveled by said transport device, said transfer slide having one or more projecting members which contact a vessel and move said vessel while the transfer slide is moved.

26. The method of claim 22 further comprising the step of agitating said plurality of vessels during said transporting step.